UNITED STATES MARINE CORPS
Logistics Operation School
Marine Corps Combat Service Support Schools
PSC Box 24401
Camp Lejeune, North Carolina 28542-0041

RLO

D106

STUDENT OUTLINE

HAZMAT TRAINING

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the requirement to maintain a hazardous material/waste (HAZMAT) disposal program and the references, supervise a hazardous material/waste (HAZMAT) disposal program, to ensure HAZMAT is properly collected, stored, and disposed.

2. Enabling Learning Objectives

(a) Given the references, a written test, and requirement to maintain hazardous waste/material disposal program, identify hazardous material/waste, per the references. (0402.01.05a)

(b) Given the references, a written test, and requirement to maintain hazardous waste/material disposal program, identify safety precautions used when handling hazardous material material/waste, per the references. (0402.01.06b)

(c) Given the references, a written test, and requirement to maintain hazardous waste/material disposal program, identify methods for maintaining the Material Safety Data Sheets (MSDS), per the references. (0402.01.06c)

(d) Given the references, a written test, and requirement to maintain hazardous waste/material disposal program, identify collection, storage, and disposal procedures for hazardous material/waste, per the references. (0402.01.06d)

(e) Given the references, a written test, and

requirement to maintain hazardous waste/material disposal program, identify training requirements for personnel handling hazardous material/waste, per the references. (0402.01.06e)

(f) Given the references, a written test, and

requirement to maintain hazardous waste/material disposal program, identify procedures to ensure environmental compliance when planning a field exercise, per the references. (0402.01.06f)

OUTLINE

1. GENERAL. Congress, states, and local communities have enacted a number of environmental laws aimed at protecting human health and improving environmental quality. These laws are designed specifically to provide cleaner air and water, to ensure the safety of drinking water sources, to protect valuable natural resources, and to properly manage toxic substances and hazardous wastes. The Marine Corps is committed to attaining and sustaining compliance with all applicable environmental laws and regulations and considers such compliance vital to the successful performance of its mission.

2. Resource Conservation and Recovery Act (RCRA). RCRA was enacted as Public Law 94-580 in 1976 as an amendment to the Solid Waste Disposal Act (SWDA). The act provides for assistance to the state and local agencies, prohibits open dumping, regulates the management of Hazardous Waste (HW), encourages recycling, reuse, and treatment of HW, and provides guidelines for solid waste management, resource recovery, and resource conservation systems. RCRA provides for “cradle to grave” tracking of HW, from point of generation through ultimate disposal, placing responsibility on the hazardous waste generator.

a. Environmental Protection Agency (EPA). The EPA may delegate authority to a State to manage a RCRA program in lieu of part or all of the Federal HW program. HW installations in a State with final authorization are subject to the State program, which must be equivalent to and may be more stringent then the Federal program.

3. DEFINITIONS.

a. Hazardous Material. Any material, including substances and wastes, which have been determined by the Department of Transportation (DOT) to be capable of posing an unreasonable risk to health, safety and property when transported in commerce. By definition, hazardous wastes and hazardous substances are also hazardous materials. Hazardous materials are listed in 49 CFR 100-199.

b. Hazardous Substance. Defined by the (EPA) as any element, compound, mixture, solution, or substance which, when released into the environment in excess of its reportable quantity, may present substantial danger to public health/welfare or the environment. Hazardous substances are listed in the Clean Water Act, the Comprehensive Environmental Response Compensation Liability Act, and the EPA's National Contingency Plan. (40 CFR 302.4)

c. Hazardous Chemicals. A chemical that is considered by Occupational Safety and Health Administration (OSHA) to be a physical or health hazard. A physical hazard means a chemical for which there is scientifically valid evidence that the chemical can be classified as a physical hazard (combustible liquid, organic peroxide, compressed gas, oxidizer, explosive, pyrophoric, flammable, unstable, or water reactive). A health hazard is a chemical that may cause acute or chronic health effects to exposed employees. (29 CFR 1910)

(1) Acute. Acute effects usually occur rapidly because of short-term exposure and are of short duration.

(2) Chronic. Chronic effects generally occur because of long-term exposure and are of a long duration.

(3) Health hazards include:

(a) Carcinogen. A carcinogen is a chemical that causes cancer in humans or has the potential to cause cancer.

(b) Corrosive. A corrosive chemical is one that causes visible destruction of irreversible alterations in living tissue by chemical action at the site of contact.

(c) Irritant. An irritant chemical is one which is not corrosive but which causes a reversible inflammatory

effect on living tissue by chemical action at the site of contact.

(d) Sensitizer. A chemical which causes a substantial portion of exposed people to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

d. Hazardous Waste. A discarded material that may be solid, semi-solid, liquid, or contained gas which because of its quantity, concentration, or physical, chemical or infectious characteristics may:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness
2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

EPA considers hazardous waste a subset of both solid waste and hazardous materials. Technically, solid wastes that are determined to be hazardous wastes are those wastes that are regulated under RCRA 40 CFR 261.31, 261.32 or 261.33 either because they are listed wastes or because they are ignitable, corrosive, reactive or toxic (characteristic wastes) and not excluded under 40 CFR 261.4. 40 CFR 261.4 contains a list of the solid wastes excluded from hazardous waste classification.

4. SAFETY PRECAUTIONS

a. Safety Equipment. The need for safety equipment at the hazardous waste site is mandated by federal law and promulgated in 40 CFR in 264.32. Also, OSHA requires that each physical operation at the installation be analyzed by supervisory or safety personnel to determine inherent as well as man-made hazards.

b. Engineer Controls. Engineer controls are those that significantly reduce the likelihood of an incident occurring because the hazard has been either reduced or eliminated by some external means (i.e. a ventilation system to remove harmful vapors, temperature control vat to reduce the vapors generated by a low flash point material).

c. Personal Protective Equipment (PPE). The purpose of PPE is to ensure that harmful chemicals do not enter the body through one of the routes of entry (i.e. inhalation,

absorption, ingestion). The type of PPE used will vary depending on the type
of chemical involved and in no case should be substitute for a safe work practice but only as a supplemental safety measure. Not all PPE is designed to protect against all types of chemicals. To ensure the PPE is suitable to the hazard presented by the specific chemical, consult both the Industrial Hygienist as well as the Material Safety Data Sheet (MSDS). Examples of PPE are:

(1) Gloves

(2) Hoods

(3) Aprons

(4) Sleeves

(5) Suits

(6) Boots

(7) Chemical resistant goggles

(8) Helmet

(9)Respirators. The use of respirators requires that a respiratory protection program be in place at the level of use. The respiratory program includes a needs assessment, PPE selection, worker training, medical evaluation and fitness testing for those personnel involved.

d. Safety Showers. Safety showers are located in most facilities having battery rooms in the event a liquid hazardous material or waste comes in contact with significant portions of the person in question. Safety showers should be checked on a regular basis to ensure operational readiness in the event of a real emergency. Additionally, safety showers should be flushed regularly to prevent the growth of canthomoeba, a bacteria that has been found to grow on water and can cause blindness.

e. Eye Wash Stations. Similar to safety showers, eye wash stations are located in most facilities having battery rooms, in
the event a liquid hazardous material or waste comes in contact with the tissue of the eye or the skin area immediately surrounding the ocular area.

5. HAZARD COMMUNICATION STANDARD (HAZCOM). Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents. In response to this threat to workers OSHA issued a rule known as Hazardous Communication Standard (HAZCOM) (29 CFR 1910.1200). OSHA's HAZCOM Rule requires employees to be trained on hazardous chemicals in the workplace, including how to recognize, understand and use labels, Material Safety Data Sheets (MSDS's), and safe procedures when working with hazardous chemicals.

a. Establishing a HAZCOM Program. Prior to establishing a HAZCOM program, a unit must have an accurate inventory of all the chemicals used and maintained in the workplace. The Hazardous Material Inventory List (HMIL) will be comprehensive and must include:

(1) Complete name of hazardous chemical

(2) Name of manufacturer or distributor

(3) Nation Stock Number (NSN) or identification number

(4) Quantity maintained on hand

b. Requirements of a HAZCOM Program. A compliant HAZCOM program requires four essential components:

(1) Labels and other forms of warning

(2) MSDS's

(3) Employee training and information

(4) Written HAZCOM program

c. Labeling. The manufacturer, importer, or distributor is responsible for applying the required labels to the containers of hazardous material. If the material is transferred from the original container into an approved container, the responsibility falls on the using unit to label that container with the same requirements as the original container:

(1) Chemical identity

(2) Physical hazards

(3) Manufacturers name and address

6. MATERIAL SAFETY DATA SHEET (MSDS). The purpose of the MSDS is to provide detailed information on each hazardous chemical, including potential hazardous effects, physical and chemical characteristics, and recommendations for appropriate protective measures.

a. Understanding the MSDS. The regulation does not require the information to be presented in any specific order or format. The required information is generally divided into nine sections:

(1) Production identification

(2) Hazardous ingredients

(3) Physical data

(4) Fire and explosion data

(5) Health hazard information

(6) Reactivity data

(7) Spill or leak procedures

(8) Special protection information

(9) Special precautions

b. MSDS Accessibility. MSDS's must be readily available to employees when they are in their work areas. MSDS's for all hazardous materials must be readily available to all personnel during each workshift. For employees who must travel between workplaces during a work shift, the MSDS may be kept at the primary workplace facility. Acceptable methods for retaining MSDS's in the workplace are the MSDS file and the Hazardous Material Information System (HMIS). The responsible individual should verify the HMIL against on-hand MSDS file. If any MSDS's are missing, a current MSDS can be acquired by:

(1) Contacting the manufacturer directly

(2) Printing a copy from the HMIS

(3) Accessing the exact chemical and manufacturer from a variety of search engines on the Internet

7. HAZARDOUS MATERIAL IDENTIFICATION. Hazardous Materials are regulated by DOT. No other single group of commodities requires the degree of specialized handling as hazardous materials. There are thousands of these dangerous products in our society and failure to properly identify, store and handle such materials can cause serious risks to personnel health as well as to the environment.

a. The Department of Transportation Hazardous Materials Communication System consists of the following components:

(1) Hazardous Materials Table (HMT)

(2) Shipping documents

(3) Marking, labeling, and placard requirements

(4) Training to communicate the risk associated with hazardous materials in transportation

b. Hazardous Materials Table (HMT). The HMT designates the materials listed as hazardous materials for the purpose of transportation. (49 CFR 172.101)

c. Marking Requirements. According to Federal Regulations, each person who offers a hazardous material for transportation will mark each package with:

(1) Proper shipping name

(2) Identification number

(3) Hazard class

(4) Packing group

(5) Weight

d. Placarding requirements. DOT regulations require hazardous materials being transported to be placarded under

certain circumstances in accordance with 49 CFR (i.e. aircraft are not placarded but trucks, railcars and 463L pallets are placarded).

8. ARRIVAL OF HAZMAT AT THE INSTALLATION (COLLECTION)

a. Although current regulations require that defense installations receive advance notice of expected receipts of HM, shipments may arrive with little or no advance notice. Consequently, the HM identification process commences upon arrival of the carrier's vehicle at the installation's point of entry. Security personnel must, therefore, be sufficiently trained in HM identification on the basis of placards and shipping papers. Directing the vehicle to the desired unloading site accomplishes the following:

(1) Minimizes travel distances from the point of base access to the receiving or storage area

(2) Minimizes MHE operations

(3) Confines unloading operations to areas of the installation where experienced supervisory and other personnel are likely to be available to respond to leakages or spills of HM

b. Inspections. Security personnel will, upon arrival of vehicles, inspect for evidence of leaks or the presence of odors that might be indicative of damage. This inspection will include a review of shipping papers and an identification of placards that may have been affixed to the exterior of the vehicle.

9. HAZARDOUS WASTE STORAGE PRACTICES. Regulated by EPA. If an installation elects to store hazardous waste in containers (defined in Title 40 CFR, section 260.10, as any portable device in which material is stored, transported, treated, disposed of, or otherwise handled), the following requirements are prescribed:

a. Each container will comply with the requirements of Title 40 CFR, part 262, subpart C, and be clearly labeled with the words "Hazardous Waste" and with the date the installation began to collect waste in that container. Universal Waste will be marked with the words "Universal Waste"; those waste streams include lithium sulfur dioxide batteries, nickel-

cadmium batteries, mercury batteries, magnesium batteries, mercury thermostats and pesticide lindane.

b. Containers must be kept in good condition and handled carefully, and leaking ounces must be replaced immediately in accordance with Title 40 CFR, part 265, subpart I.

c. Hazardous waste will not be stored in a container if it may cause rupture, leaks, corrosion, or other failure in accordance with Title 40 CFR, part 265, subpart I.

d. Containers will be kept closed except when being filled or emptied in accordance with Title 40 CFR, part 265, subpart I.

e. Containers will be inspected weekly for leaks or corrosion in accordance with Title 40 CFR, part 265, subpart I.

f. To create a buffer zone when storing ignitable or reactive wastes, containers will be placed as far as practicable inside the installation property lines, but at least 50 feet away in accordance with Title 40 CFR, part 265, subpart I.

g. Wastes that could react together to cause fire, leaks, or other releases must not be placed in the same container in accordance with Title 40 CFR, part 265, subpart I.

h. Incompatible wastes should be isolated from one another to prevent the possibility of accidental mixing that could result in a reaction.

i. The date upon which each period of accumulation begins must be clearly marked and visible for inspection on each container in accordance with Title 40 CFR, part 262, subpart C.

10. DISPOSAL

a. HW/HM disposal procedures. HW/HM generators must remove all HW accumulation from the 90-day site area and dispose of it at a site with a permit within 90 days of the accumulation start date.

b. HW/HM Storage requirements. The long-term HW storage facility shall be utilized to store HW/HM awaiting disposal by Marine Corps Base and their tenants. HW generators can store

HW awaiting turn-in. The Marine Corps uses three types of temporary accumulation and storage sites:

(1) 90-Day Site

(2) Satellite Accumulation Area (SAA). SAA is a term developed by EPA to designate a work site that may generate and accumulate HW without regard to the 90-day storage limit normally applicable to non-permitted HW storage facilities.

(3) Universal Waste Site (UWS). The purpose of establishing a special sub-category of hazardous waste storage is to assist the generators of Universal Waste (UW) in tracking and managing Universal Waste.

c. The requirements for marking the container's Accumulation Start Date are dependent upon where the waste is being accumulated (90-day, SAA, UWS). Disposal procedures can be found in Base Orders.

11. TRAINING

a. EPA's Resource Conservation and Recovery Act (RCRA) states that all personnel involved in the management of hazardous waste, including those working at hazardous waste generation points and temporary storage areas must be properly trained within six months of appointment and attend an annual review of training.

b. OSHA's Hazard Communication Standard states employers must establish an information and training program for every employee who may be exposed to hazardous chemicals when working. Employees must be provided information and trained before initial assignment to work with a hazardous chemical and whenever the hazards change.

c. DOT's HAZCOM requirements state HazMat employees shall receive:

(1) General awareness/familiarization training

(2) Function specific training

(a) Duties performed

(b) Safety training

(c) OSHA or EPA training

(3) Initial and recurrent training

(a) Initial training within 90 days

(b) Recurrent training every three years

(c) Relevant training from prior employer is acceptable if documented.

(d) Compliance with training requirement responsibility of the HAZMAT employer.

(e) Record keeping

12. TACTICAL OPERATIONS FROM AN ENVIRONMENTAL PERSPECTIVE

a. The relationship between military training and environmental protection should be considered in any field operation. We should strive to provide realistic training while protecting the natural environment so it can be used in the future. Regulations concerning environmental restrictions are mandated by Federal law and are applicable to all federal agencies, including military reservations. Some procedures to ensure environmental compliance when planning a field exercise:

(1) Comply with Range Control Standard Operating Procedures (SOP)

(2) Comply with Environmental Management Division's SOP. Some consideration for field operations include:

(a) Endangered/threatened animal and birds

(b) Endangered plants

(c) Off-road vehicle movement

(d) Fighting positions

(e) Laying cable and field wire

(f) Cutting brush and trees

(g) Wetlands

(h) Natural, archaeological and historic sites

(i) Waste disposal

(j) Hazardous Materials and Petroleum Oil Lubricants (POL) operations

(k) Beach operations

(l) Stream crossing

(m) Environmental assessments

13. <u>Spill Management procedures</u>. DOD installations with facilities that may discharge oil, HM hazardous wastes, or hazardous substances in reportable quantity are required by statute to prepare a Spill Prevention Control and Countermeasure plan (SPCC). The SPCC plan is oriented toward prevention of spills and releases of HM. The effects of a spill or release can range from superficial damage with few or no injuries to a mishap of catastrophic proportions involving loss of life, widespread damage, and major environmental damage. Regardless of the extent of the damage, productive time is nearly always lost as personnel and facilities are evacuated, damage is assessed, and the release is cleaned up. In more severe cases, the facility's ability to perform its assigned mission may be impaired either temporarily or for a prolonged period if it becomes necessary to suspend operations. When the total cost of an HM mishap is considered, including lost productivity, cleanup and restoration, and replenishment of lost Government-owned stocks, the appropriateness of the expression "an ounce of prevention is worth a pound of cure" is obvious in the case of HM management.

a. <u>SPCC Plan Requirements</u>. Facility SPCC plans will, as a minimum, specifically address the following areas per Title 40 CFR, part 112:

(1) Maintenance of complete records of all spills or releases, federally reportable or not, occurring at the facility. The spills occurring during the past 12 months will be identified and listed together with corrective actions taken in each case. Specific plans implemented to prevent

recurrences in each case will also be listed.

(2) Predictions of the direction of flow, rate, and maximum quantities of oil or hazardous substances that might be spilled or released for each storage location or handling site.

(3) Containment provisions and diversion structures or equipment in place for use to prevent the discharge from reaching surface waters or other sensitive resources. Preventive systems may include dikes, berms, curbs, gutters or other drainage systems, booms, diversion or retention ponds, or absorbent materials.

(4) Conformance to EPA guidelines published in Title 40 CFR pertaining, where applicable, to drainage, bulk storage tanks, transfer operations, and pumping.

(5) Regular SPCC inspections must be conducted. Signed records of inspections must be retained as part of the SPCC plan for 3 years.

(6) Security procedures and precautions

(7) Requirements for personnel training and spill prevention procedures briefings

(8) Any of the following information that can be developed separately or included in the above listing:

(a) Identification of populations at risk. In addition to considering nearby civilian population centers, consideration will be given to on base populations in administrative offices, family housing, etc.

(b) Identification or environmentally sensitive areas, probable need for waterfowl conservation efforts, and the presence of endangered species and other protected resources

(c) Consideration of local geography, hydrology, and climate

(d) Most probable locations for pollution incidents

b. SPCC plans must be updated every 3 years and approved by a registered professional engineer. In addition, the SPCC

plan must be amended and recertified whenever there is a change to a facility that would effect the facility's potential for an oil or hazardous substance spill (i.e., a new tank is installed, berms are modified, etc.).

c. Installation Spill Contingency Planning (ISCP). Under the National Contingency Plan, Title 40 CFR, part 300, federal installations are to respond to their own oil and hazardous substance spills. Thorough preplanning of oil and hazardous substance spill response is necessary so that when a spill occurs, facility personnel can respond quickly and effectively, minimizing damage to human health and the environment. Contingency planning must take into consideration the following phases of spill response: discovery, notification, assessment, containment, cleanup, and disposal. Units accumulating hazardous waste are required to have a site specific Unit Spill Contingency Plan (USCP) as part of their command SOP. Contents of the USCP can be found in Base Orders.

d. Spill contingency plans contain certain types of advanced preparedness information, including amounts and locations of response equipment and materials, and are primarily oriented toward specifying procedures to be followed in the event of a spill or release of oil or hazardous chemicals. Spill contingency plans will contain:

(1) Names, addresses, and 24-hour phone numbers of the On-scene commander and alternates

(2) Emergency equipment and response materials, locations, and capabilities

(3) An evacuation plan, including signals, evacuation routes, and alternate routes

(4) A description of arrangements with local fire and police departments, hospitals, contractors, and State and local emergency response teams for response or coordination of services

(5) A description of personnel action and responsibilities required in response to known or suspected personnel exposures, fires, explosions, or any unplanned sudden or gradual release of oil, HM, hazardous substances, or hazardous wastes to air, soil, or surface water at the facility or nearby community. This response is generally

described in the following sequence:

(a) Phase I: discovery and notification (including both internal reporting and notification of participating outside organizations)

(b) Phase II: containment and countermeasures (such as public health protection, source control, barrier placement, etc)

(c) Phase II: cleanup, mitigation, and disposal

(d) Phase IV: documentation (including external reporting and follow-up written reports)

Note. Suggested document for developing a spill contingency plan is FEMA-10 (Federal Emergency Management Agency Planning Guide and Checklist for Hazardous Materials Contingency Plans and Hazardous Materials Planning Guide).

REFERENCES:

1. CFR 40, Hazardous Material

2. CFR 49, Code of Federal Regulations (Transportation)

3. DCAM 4145.11, Storage and Handling of Hazardous Material

4. FM 10-69, Local Hazardous Waste SOP

5. DOD 4500.9-R, Defense Transportation Regulations PT II Cargo

6. LOCAL HAZMAT SOP, Local Hazardous Waste SOP

7. MCO 10330.2, Storage/Handling of Compressed Gases

8. MCO5100.8, Marine Corps Ground Occupational Safety and Health

9. MCO P4030.19 Packaging and Material Handling Preparation of Hazardous Materials for Air Shipment

10. MCO P5090.2, Environmental Compliance and Protection Manual

11. NAVSEA SW020-AC-SAFO, Navy Transportation and Storage Data for Ammunition, Explosives, and Related Hazardous Materials

12. NAVSEA SW020-AF-ABKO, Motor Vehicle Driver and Shipping Inspector’s Manual for Ammunition, Explosives, and Hazardous Material (NAVSEA SW020-AF-ABK-010)

13. PC-POP III, Performance Oriented Packaging (POP) Personal Computer Program III

14. TM 9-6140-200-14, Operator, Unit, Direct Support and General Support Maintenance Manual for Batteries